APPENDIX B

VERSION WITH MARKINGS TO SHOW CHANGES MADE
37 C.F.R. § 1.121(b)(iii) AND (c)(ii)

SPECIFICATION:

Paragraph at page 8, lines 3-5:

A color separation filter, such as an unshown mosaic filter, is arranged on the imaging surface (a photosensitive surface) of the CCD 26, performing color separation on a per pixel basis.

Paragraph at page 10, lines 7-20:

FIG. 2 shows the construction of an electrical system of the endoscope apparatus having the endoscope 2A, for example. The DSP board 30 includes a DSP 32 having (a CCD drive function and) a signal processing function. In the DSP 32, as shown in FIG. [3. A] 3, a CCD drive & TG circuit 34 generates a CCD drive signal and a timing signal (simply referred to as TG) in synchronization with a timing signal of a system signal generator circuit (simply referred to as an SSG circuit) 33 in the DSP 32. The CCD drive signal and the timing signal are fed to a delay line delay circuit (simply referred to as DL delay circuit) 35, and are adjusted by the DL delay circuit 35 in timing corresponding to the cable length (signal line length) in accordance with a delay amount setting signal coming from a DSP controlling microcomputer (simply referred to as DSP controlling computer) 36.

Paragraph at page 10, lines 21-24:

The DSP controlling computer 36 is connected to a DIP switch 37, for instance, and outputs, to the DL delay circuit 35, a corresponding delay amount setting signal of a plurality of bits in response to a combination of ON/OFF settings of the DIP switch 37.

Paragraph at page 21, lines 18-23:

Specifically, the gain setting circuit 71 includes [a] gain setting potentiometers 75r and 76r for setting gains for the color signals of R and B with the G color signal set as a reference,

and gain setting potentiometers 75b and 76b for setting gains for the color signals of R and B for setting the white balance in the xenon lamp 21B.

Paragraph at page 26, line 23 to page 27, line 3:

Left and right angle wires 85l and 85r (see FIG. 11) arranged on the left and the right, [in perpendicular to] arranged 90 degrees away from the angle wires 85u and 85d within the insert section 11A are entrained about a pulley 86b within the control section 12 and the pulley 86b is connected a left and right bending motor 87b.

Paragraph at page 27, lines 7-16:

The DSP controlling computer 36 is connected to an upward and downward bend direction control knob 89a and a left and right bend direction control knob 89b. By tilting the bend direction control knobs 89a or 89b, [an] a command signal responsive to the command direction is input to the DSP controlling computer 36. The DSP controlling computer 36 outputs, to the motor driver 88, a control signal responsive to the commanded direction to cause the motor 87a or 87b to rotate. One of the angle wires 85u, 85d, 85l, and 85r is thus pulled, and the bending portion 82 is bent toward the angle wire 85k (k=u, d, l, and r).

Paragraph at page 27, lines 17-20:

With this arrangement, the bending portion 82 [is] can be bent toward a desired direction with only a light force [involved] because of motorized driving, compared with a manual bending operation in which the angle wire 85k is pulled by hand.

Paragraph at page 33, line 16 to page 34, line 2:

In the endoscope 2B shown in FIG. 13, a digital luminance signal Y and digital color signals C (color-difference signals U and V) output by a digital input and output controller 47a in the DSP 32 in the DSP board 30 of the endoscope 2A shown in FIG. 11 are temporarily stored in a frame memory 97 in the function adjustment/expansion circuit board 31", then read from the frame memory 97 with a standard video period, and converted into an analog luminance signal Y

and analog color signals C by a D/A converter 98. The analog luminance signal Y and [analogy] <u>analog</u> color signals C are then converted by an RGB encoder 99 into an RGB signal, which is then output through a video output terminal 16.

CLAIMS:

AMENDED 4. [An endoscope apparatus according to one of Claims 1 and 2,] <u>An endoscope apparatus comprising:</u>

<u>a general-purpose video processing circuit having a drive signal generation function for driving a solid-state image pick-up device built into an endoscope and a signal processing function for outputting a standard video signal by processing an output signal from the solid-state image pickup device; and</u>

<u>an endoscopic function adjusting circuit comprising a function modifying circuit, connected to the general-purpose video processing circuit, for modifying at least one of the drive signal processing function and the signal processing function executed by the general-purpose video signal processing circuit in accordance with the endoscope having the solid-state image pickup device therein;</u>

wherein the endoscopic function [adjustment] <u>adjusting</u> circuit comprises a delay amount adjusting circuit for canceling the effect of a signal delay taking place in a signal cable connecting the solid-state image pickup device to the signal processing circuit.

AMENDED 5. [An endoscope apparatus according to one of Claims 1 and 2,] <u>An endoscope apparatus comprising:</u>

<u>a general-purpose video processing circuit having a drive signal generation function for driving a solid-state image pick-up device built into an endoscope and a signal processing function for outputting a standard video signal by processing an output signal from the solid-state image pickup device; and</u>

<u>an endoscopic function adjusting circuit comprising a function modifying circuit, connected to the general-purpose video processing circuit, for modifying at least one of the drive signal processing function and the signal processing function executed by the general-purpose</u>

video signal processing circuit in accordance with the endoscope having the solid-state image pickup device therein;

wherein the endoscope is detachably connected to a light source, and the endoscopic function adjusting circuit comprises at least a white balance adjusting circuit for [setting a white balance state in view of] detecting ID information indicative of the wavelength distribution of light emitted by a lamp built [in] into the light source, and automatically setting a white balance state in view of said ID information.

AMENDED 6. [An endoscope apparatus according to one of Claims 1 and 2,] An endoscope apparatus comprising:

a general-purpose video processing circuit having a drive signal generation function for driving a solid-state image pick-up device built into an endoscope and a signal processing function for outputting a standard video signal by processing an output signal from the solid-state image pickup device; and

an endoscopic function adjusting circuit comprising a function modifying circuit, connected to the general-purpose video processing circuit, for modifying at least one of the drive signal processing function and the signal processing function executed by the general-purpose video signal processing circuit in accordance with the endoscope having the solid-state image pickup device therein;

wherein the endoscopic function adjusting circuit comprises an adjusting circuit accommodating a variation in the number of pixels, for producing the standard video signal, even when the number of the pixels in the solid-state image pickup device is changed, by storing dummy pixels in a frame memory to compensate for a reduced number of pixels, and by applying a zoom function to produce said standard video signal from said reduced number of pixels.

AMENDED 7. An endoscope apparatus according to [one of Claims 1 and 2] Claim 6, wherein the endoscopic function adjusting circuit has the function of outputting a video signal [of] which produces a still image.

AMENDED 8. [An endoscope apparatus according to one of Claim 1 and 2,] An endoscope apparatus comprising:

a general-purpose video processing circuit having a drive signal generation function for driving a solid-state image pick-up device built into an endoscope and a signal processing function for outputting a standard video signal by processing an output signal from the solid-state image pickup device; and

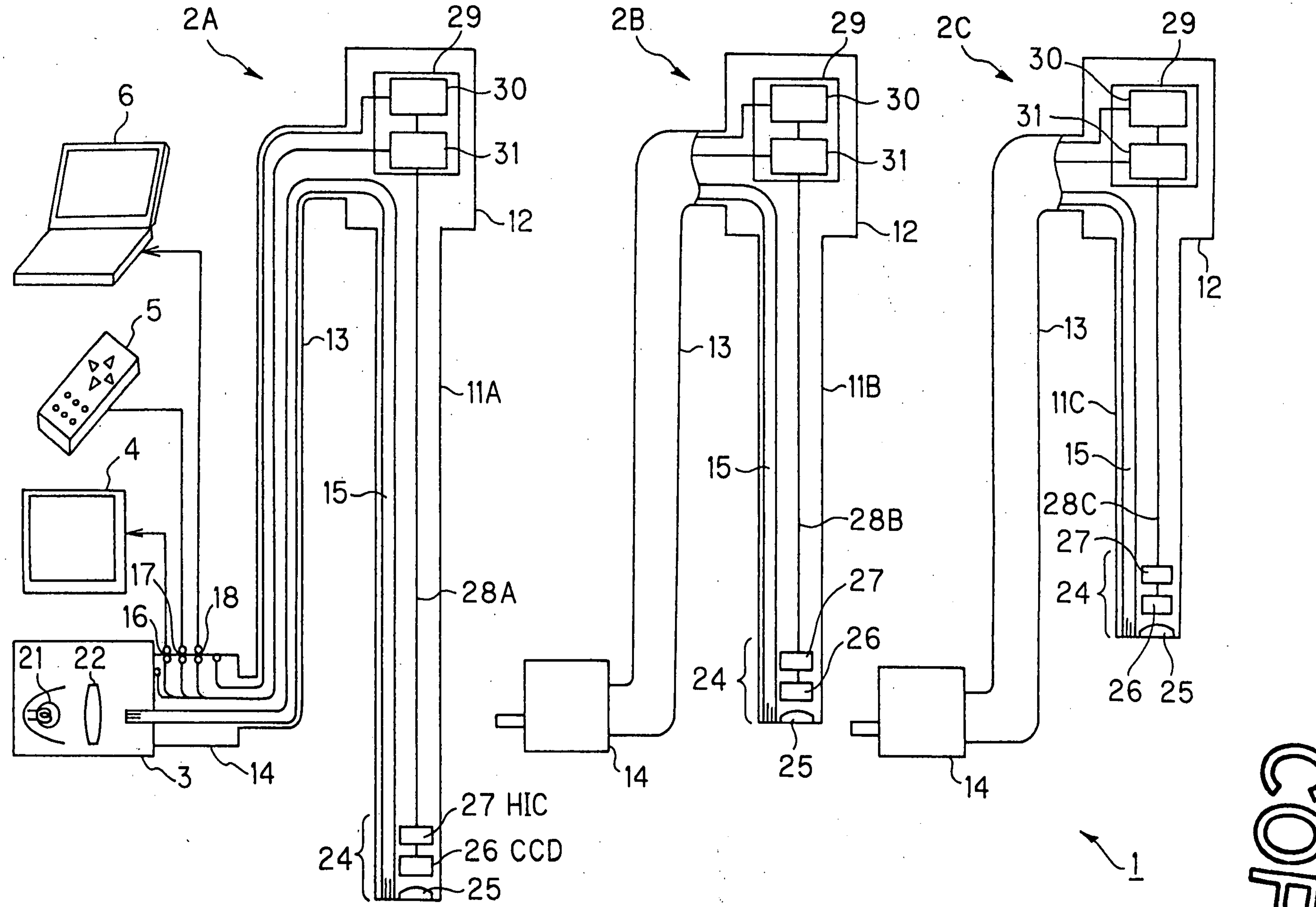
an endoscopic function adjusting circuit comprising a function modifying circuit, connected to the general-purpose video processing circuit, for modifying at least one of the drive signal processing function and the signal processing function executed by the general-purpose video signal processing circuit in accordance with the endoscope having the solid-state image pickup device therein;

wherein the endoscopic function adjusting circuit has the motorized function of flexing a bending portion of the insert section, interlocked with pan and tilt display functions which compensate for said motorized bending operation.

AMENDED 9. An endoscope apparatus according to one of Claims [1 and 2] 4, 5, 6 and 8, wherein the general-purpose video signal processing circuit and the endoscopic function adjusting circuit [remain unchanged from the respective circuit arrangements thereof when the length of the insert section becomes different] are usable with a plurality of insert sections having different respective lengths and correspondingly different internal delay amounts.

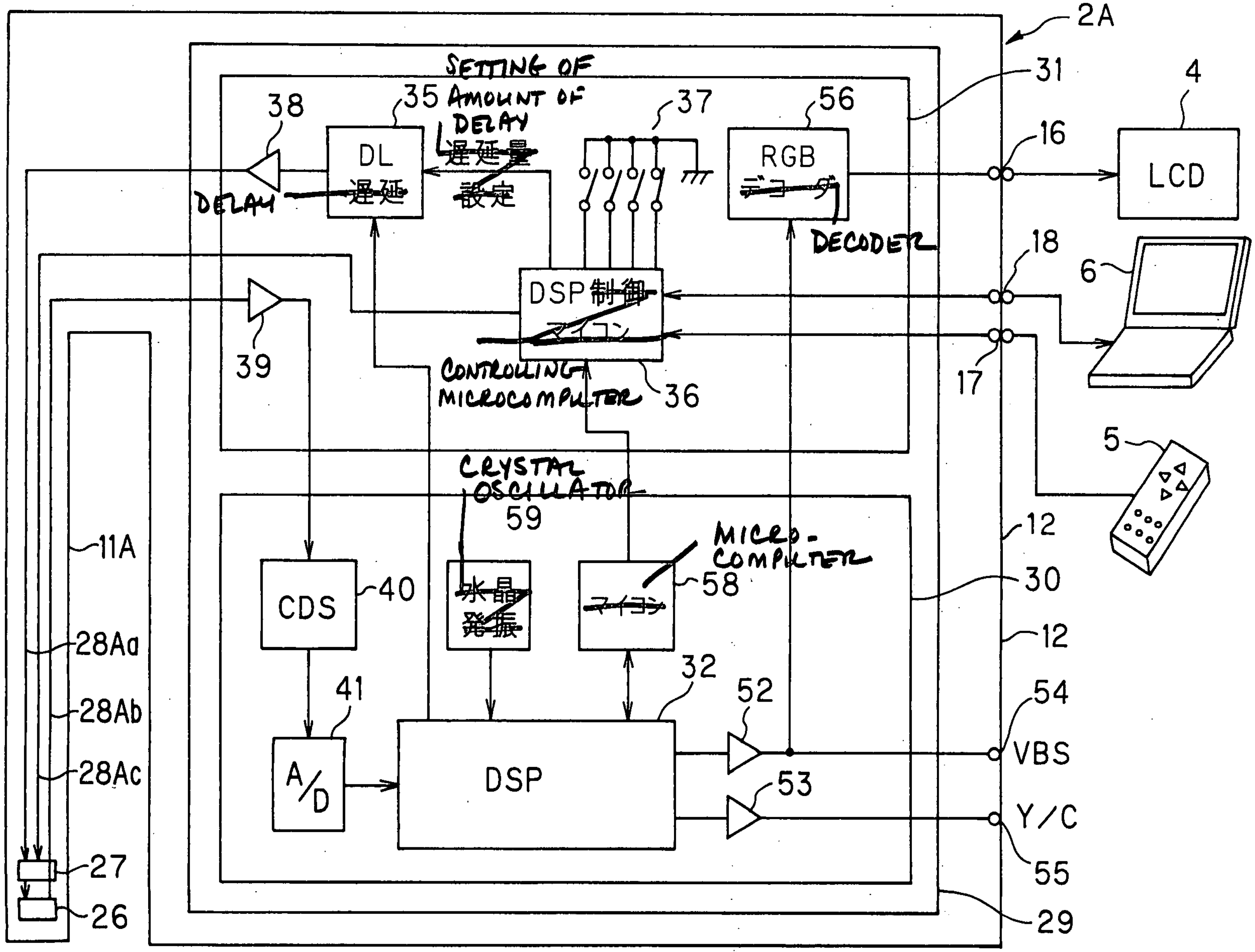
AMENDED 10. An endoscope apparatus according to one of Claims [1 and 2] 4, 5, 6 and 8, wherein the general-purpose video signal processing circuit and the endoscopic function adjusting circuit [remain unchanged from the respective circuit arrangements thereof when the number of pixels in the solid-state image pickup device becomes different] are usable with a plurality of solid-state image pickup having different respective numbers of pixels.

FIG.1



RED-LINED COPY

FIG.2



2A
31
4
LCD
16
18
6
17
5
12
30
54
VBS
Y/C
55
29
SETTING OF AMOUNT OF DELAY
~~遅延量設定~~
35
DL
~~遅延~~
DELAY
38
37
56
RGB
~~デコーダ~~
DECODER
DSP ~~制御マイコン~~
CONTROLLING MICROCOMPUTER
36
39
CRYSTAL OSCILLATOR
59
~~水晶発振~~
MICRO-COMPUTER
~~マイコン~~
58
CDS
40
41
A/D
DSP
32
52
53
11A
28Aa
28Ab
28Ac
27
26

FIG.3

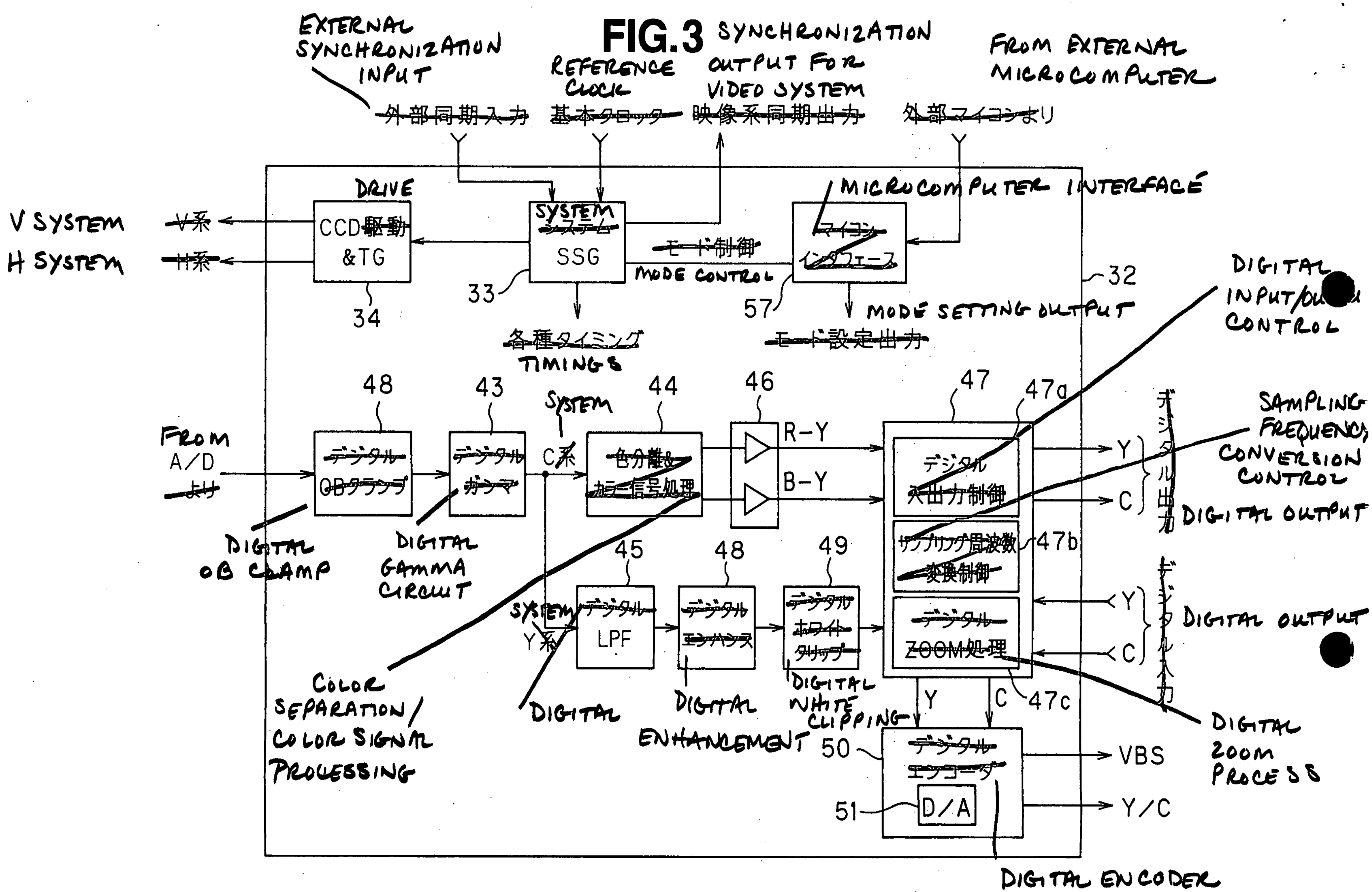

EXTERNAL SYNCHRONIZATION INPUT
外部同期入力
REFERENCE CLOCK
基本クロック
SYNCHRONIZATION OUTPUT FOR VIDEO SYSTEM
映像系同期出力
FROM EXTERNAL MICROCOMPUTER
外部マイコンより
MICROCOMPUTER INTERFACE
マイコンインタフェース
V SYSTEM
V系
H SYSTEM
H系
DRIVE
CCD駆動 &TG
SYSTEM
システム
SSG
モード制御
MODE CONTROL
34
33
57
32
各種タイミング
TIMINGS
MODE SETTING OUTPUT
モード設定出力
FROM
A/D
より
48
デジタル OBクランプ
DIGITAL OB CLAMP
43
デジタル ガンマ
DIGITAL GAMMA CIRCUIT
SYSTEM
C系
44
色分離& カラー信号処理
COLOR SEPARATION/ COLOR SIGNAL PROCESSING
46
R−Y
B−Y
47
47a
デジタル 入出力制御
DIGITAL INPUT/OUTPUT CONTROL
47b
サンプリング周波数 変換制御
SAMPLING FREQUENCY CONVERSION CONTROL
47c
デジタル ZOOM処理
DIGITAL ZOOM PROCESS
Y
C
デジタル出力
DIGITAL OUTPUT
デジタル入力
DIGITAL OUTPUT
SYSTEM
Y系
45
デジタル LPF
DIGITAL
48
デジタル エンハンス
DIGITAL ENHANCEMENT
49
デジタル ホワイト クリップ
DIGITAL WHITE CLIPPING
50
デジタル エンコーダ
DIGITAL ENCODER
51
D/A
VBS
Y/C

FIG.4

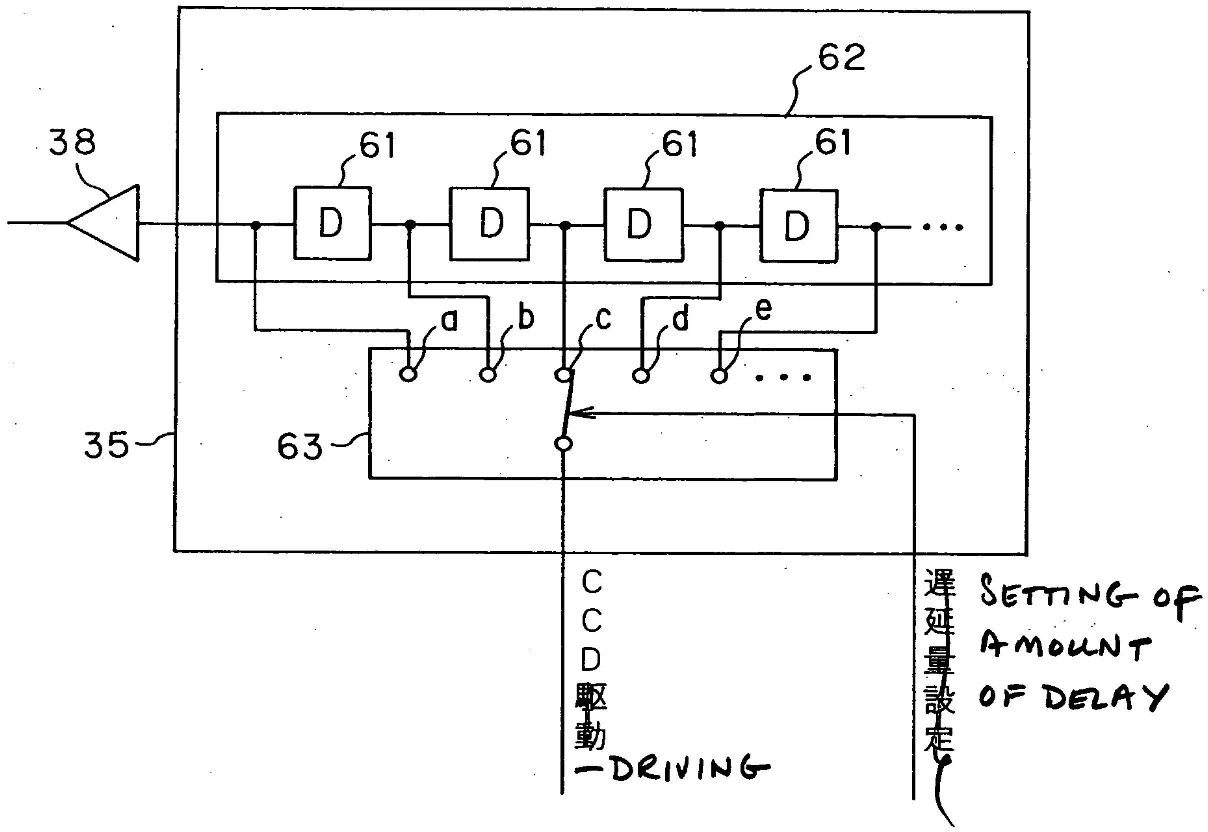

62
38
61
61
61
61
D
D
D
D
a
b
c
d
e
35
63
CCD駆動
—DRIVING
遅延量設定
SETTING OF AMOUNT OF DELAY

FIG.5

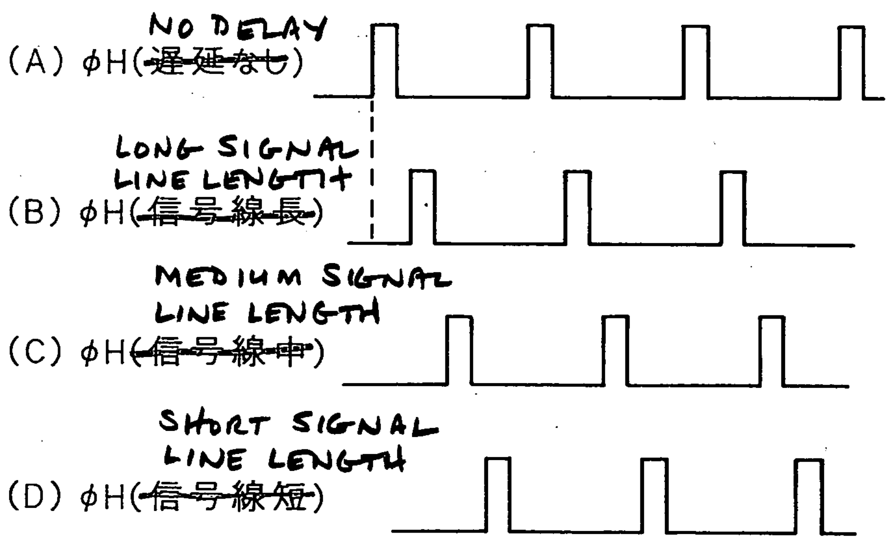

NO DELAY
(A) φH(~~遅延なし~~)
LONG SIGNAL LINE LENGTH
(B) φH(~~信号線長~~)
MEDIUM SIGNAL LINE LENGTH
(C) φH(~~信号線中~~)
SHORT SIGNAL LINE LENGTH
(D) φH(~~信号線短~~)

FIG.6

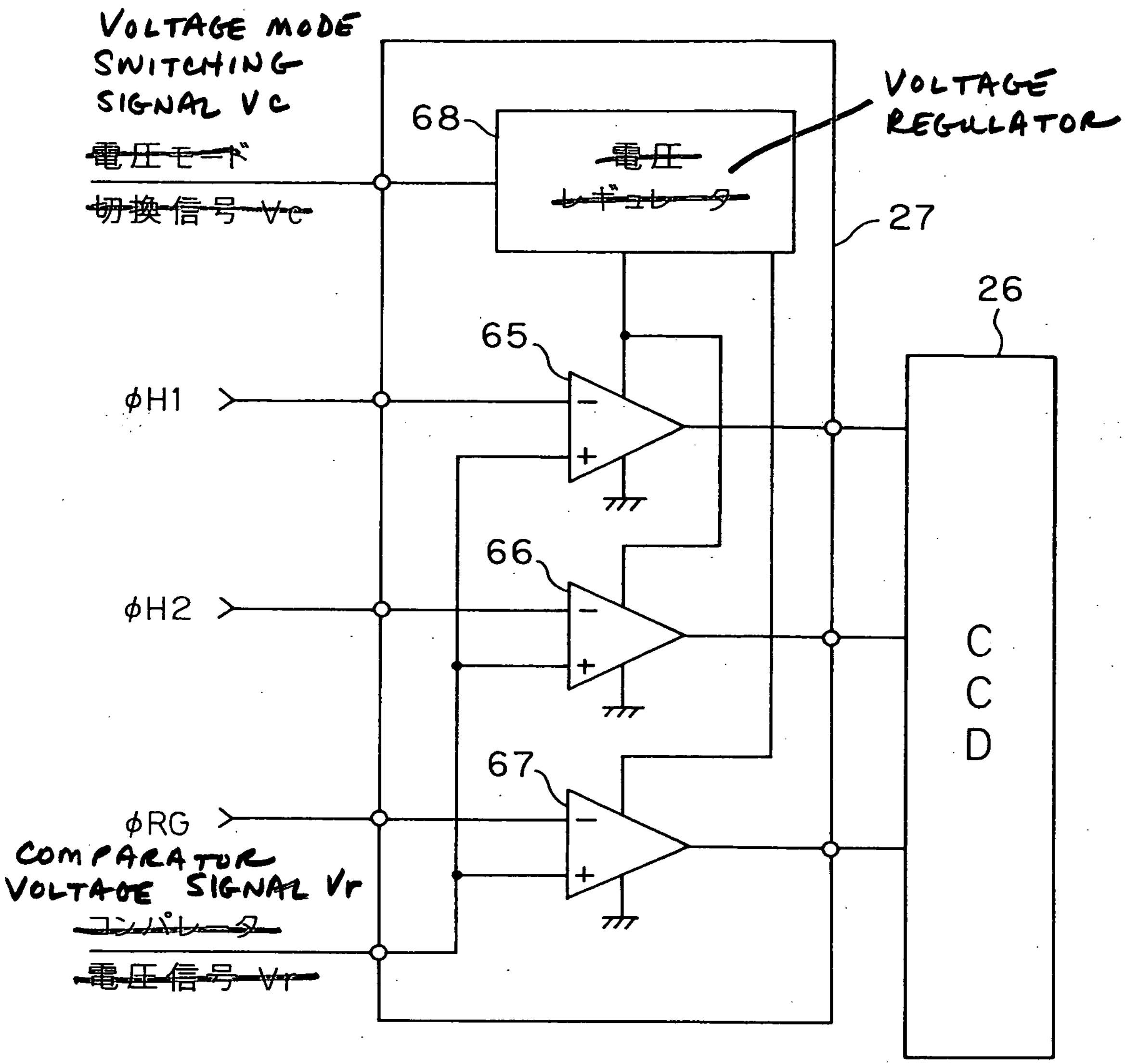

VOLTAGE MODE SWITCHING SIGNAL Vc
~~電圧モード切換信号 Vc~~
68
VOLTAGE REGULATOR
~~電圧レギュレーター~~
27
26
65
ϕH1
66
ϕH2
67
ϕRG
COMPARATOR VOLTAGE SIGNAL Vr
~~コンパレーター電圧信号 Vr~~
CCD

FIG.7

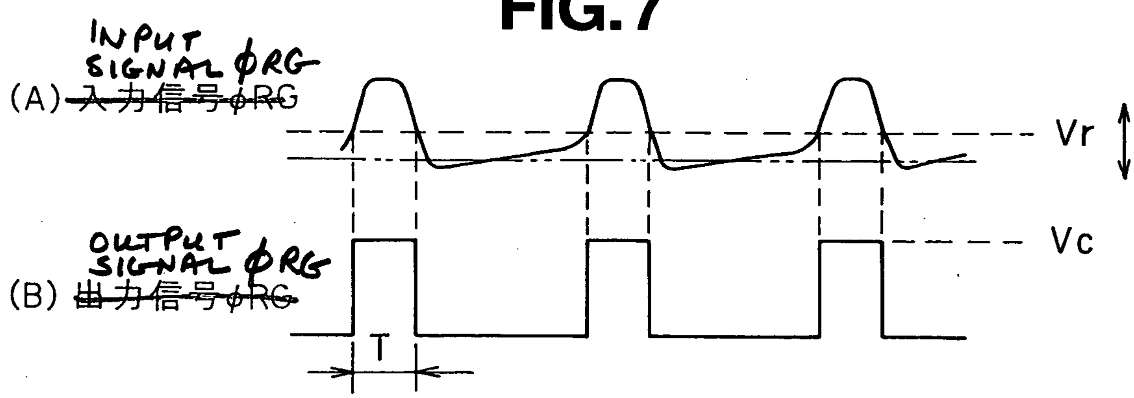
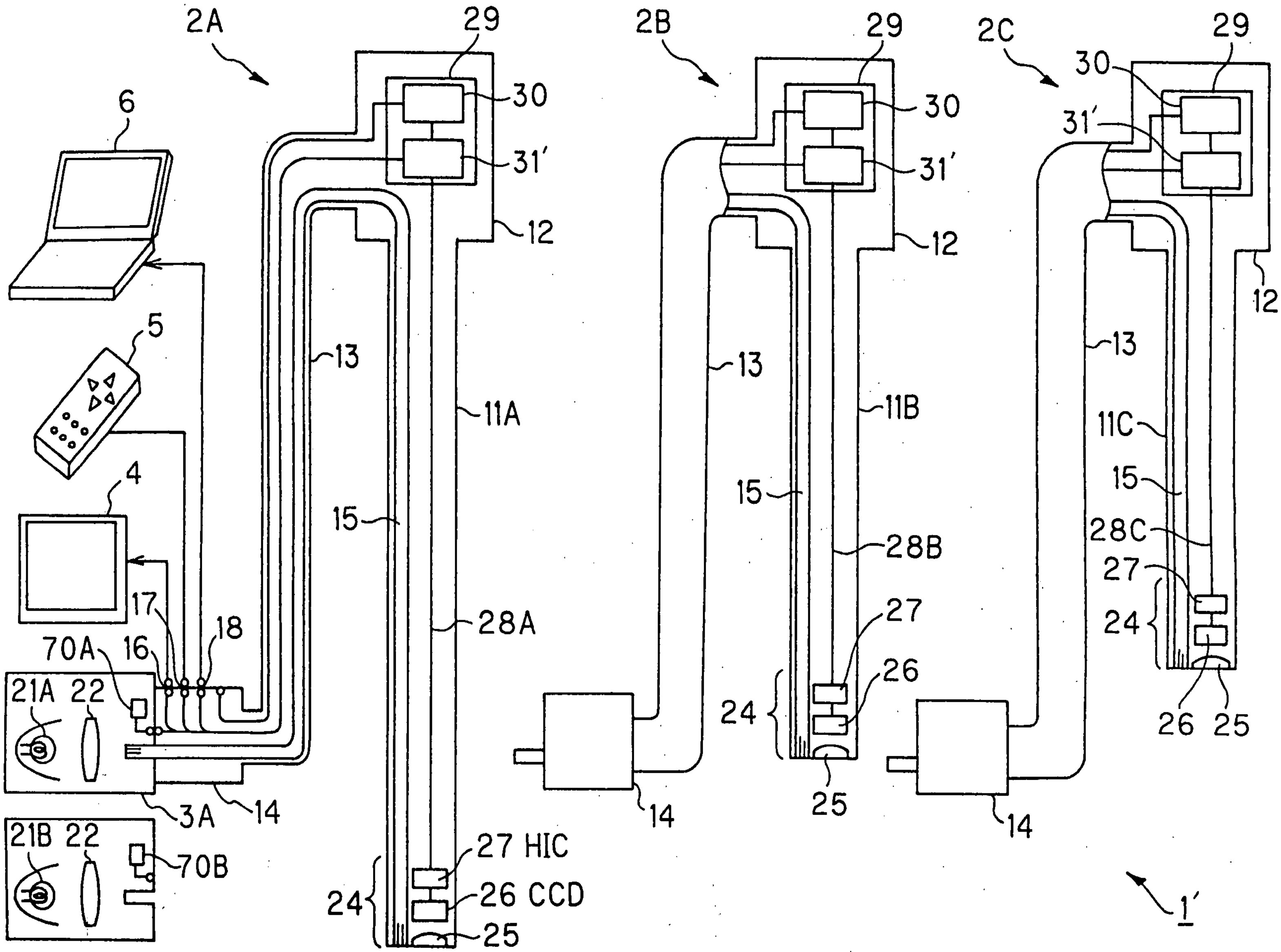
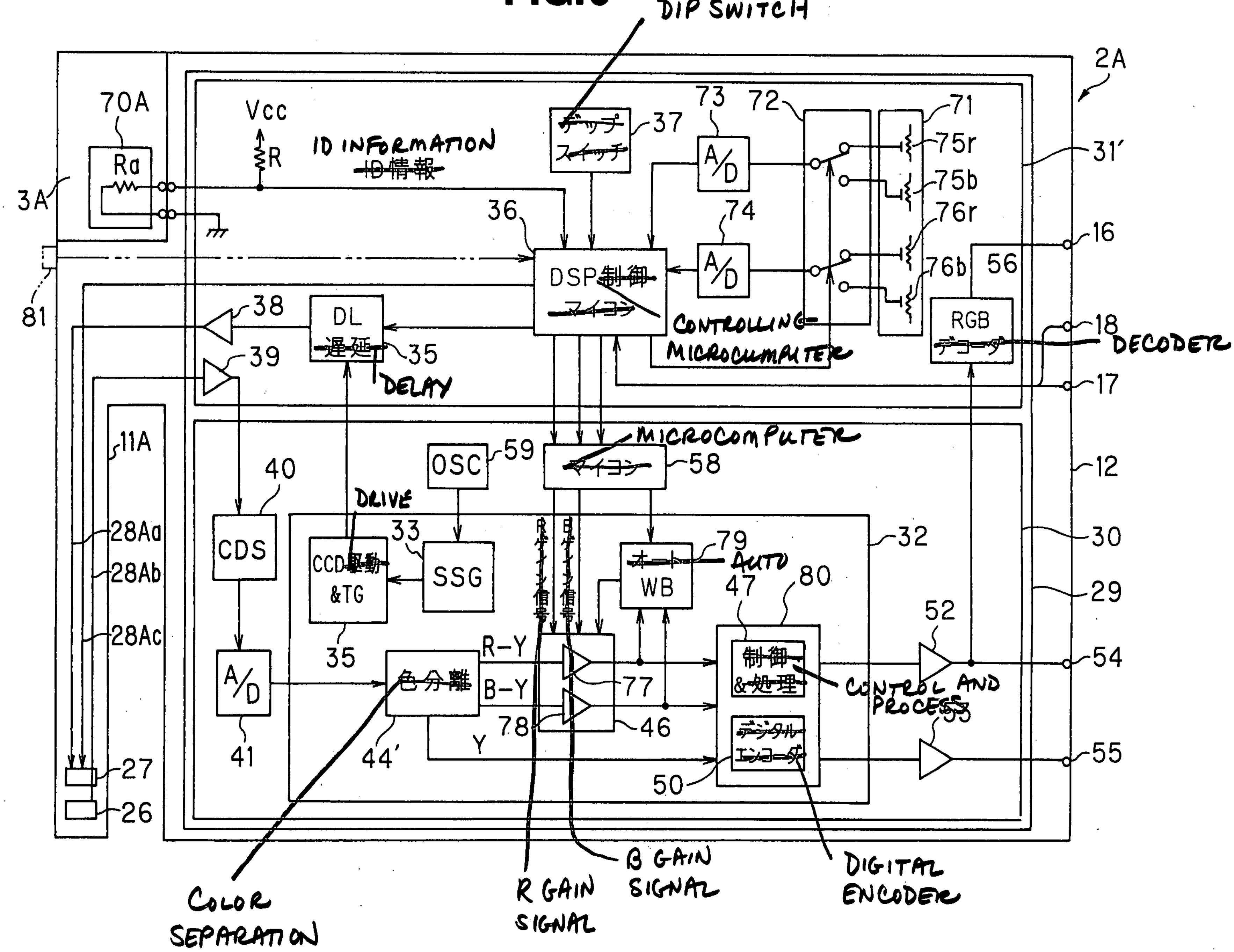

(A) INPUT SIGNAL ϕRG ~~入力信号ϕRG~~
Vr
(B) OUTPUT SIGNAL ϕRG ~~出力信号ϕRG~~
Vc
T

FIG.8



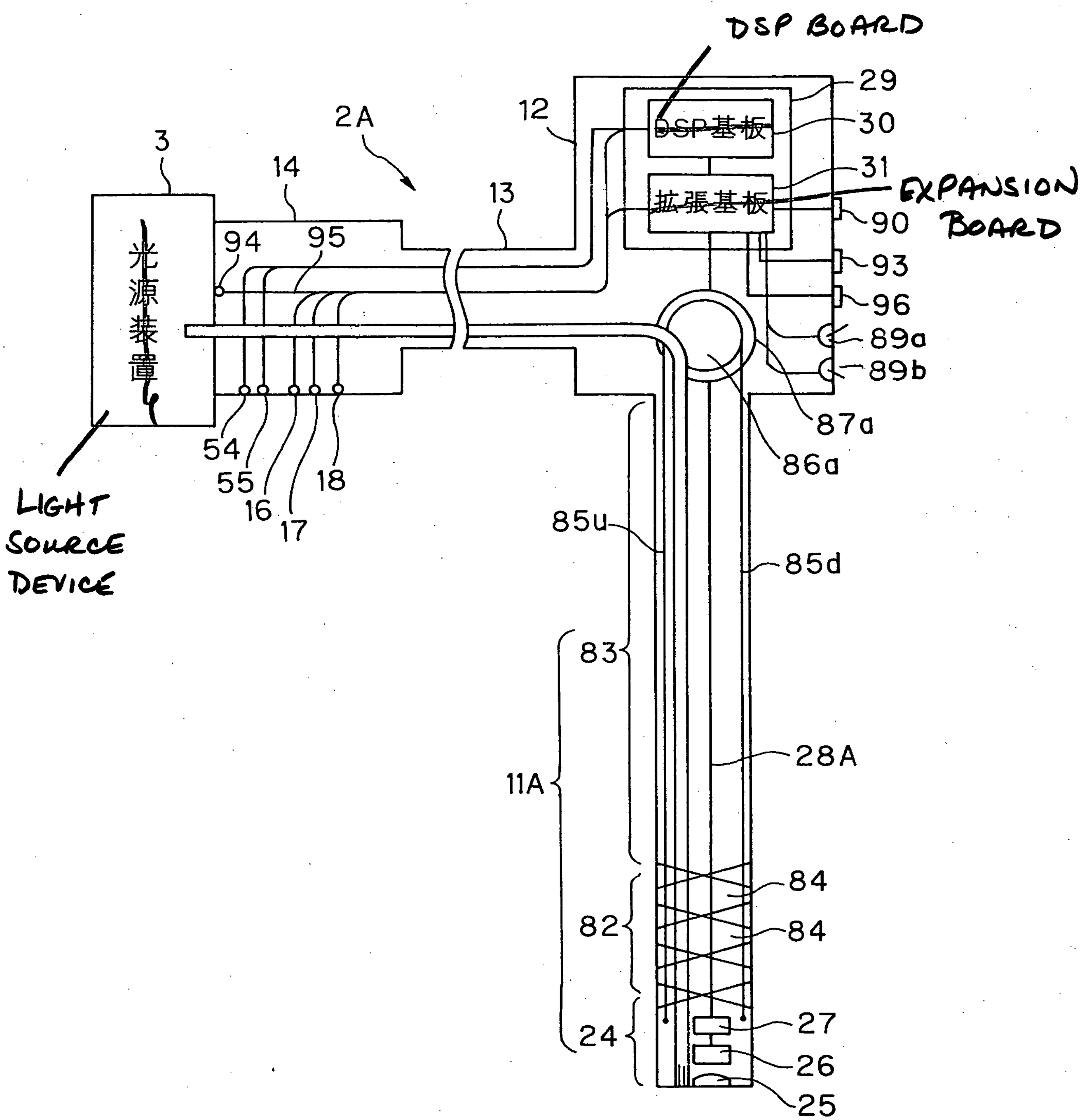
2A
2B
2C
29
30
31′
12
6
5
4
13
11A
11B
11C
15
28A
28B
28C
27
26
24
25
17
18
16
70A
21A
22
3A
14
21B
70B
27 HIC
26 CCD
1′

FIG.9



DIP SWITCH
2A
70A
Ra
3A
81
Vcc
R
ID INFORMATION
ID情報
ディップスイッチ
37
73
72
71
75r
75b
76r
76b
31′
36
74
A/D
A/D
16
56
DSP制御マイコン
CONTROLLING MICROCOMPUTER
RGB
デコーダ
DECODER
18
17
38
39
DL
遅延
35
DELAY
11A
MICROCOMPUTER
マイコン
58
59
OSC
12
40
CDS
DRIVE
33
SSG
CCD駆動&TG
35
R ゲイン信号
B ゲイン信号
オート
WB
79
AUTO
32
30
28Aa
28Ab
28Ac
47
80
29
52
R-Y
B-Y
Y
色分離
77
78
46
制御&処理
CONTROL AND PROCESS
53
54
41
44′
デジタルエンコーダ
50
55
27
26
COLOR SEPARATION
R GAIN SIGNAL
B GAIN SIGNAL
DIGITAL ENCODER

FIG. 10



DSP BOARD
29
DSP基板
30
31
拡張基板
EXPANSION BOARD
90
93
96
89a
89b
87a
86a
12
2A
13
3
14
光源装置
94
95
54
55
16
17
18
LIGHT SOURCE DEVICE
85u
85d
83
28A
11A
84
84
82
27
24
26
25

FIG. 11

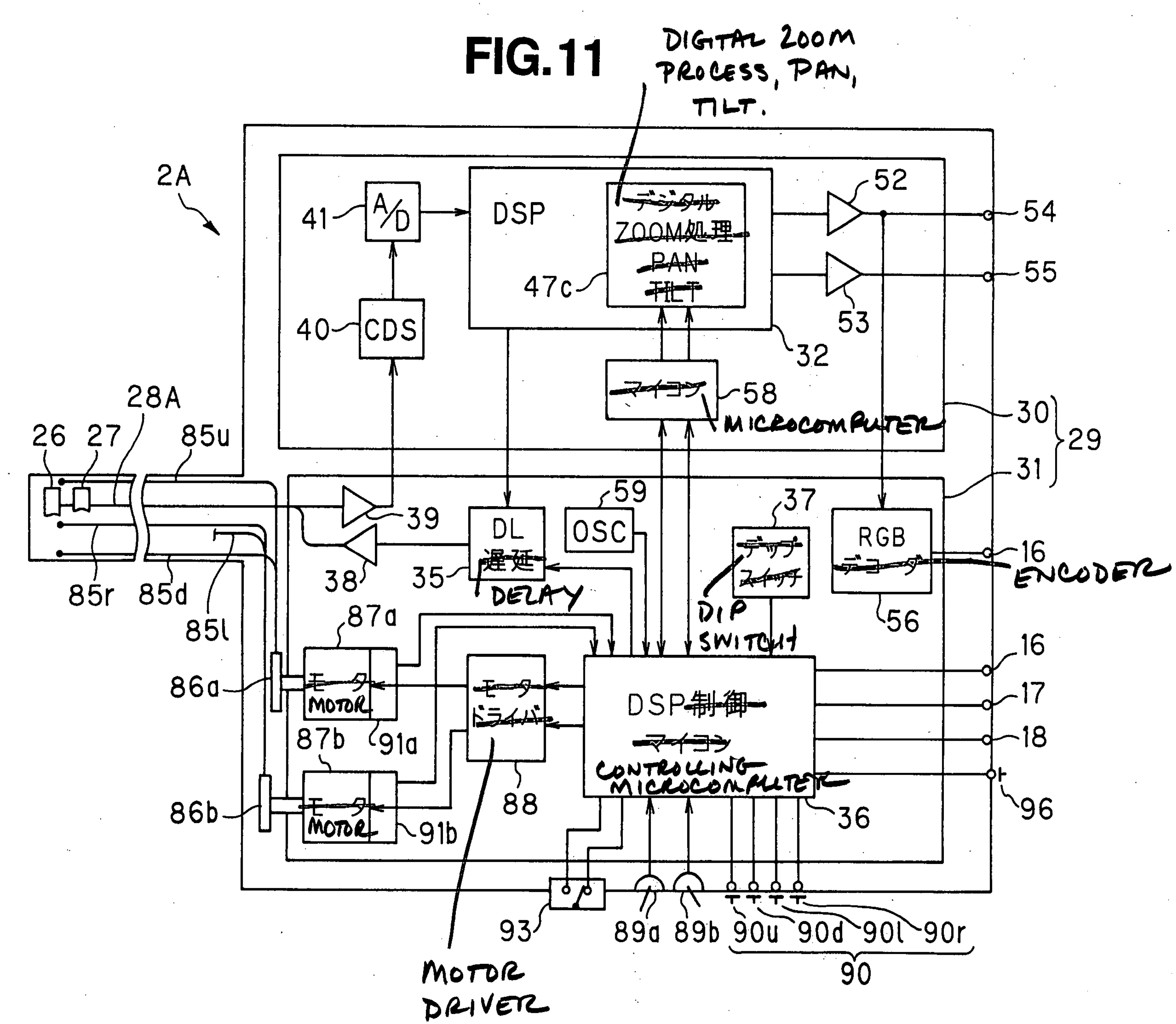
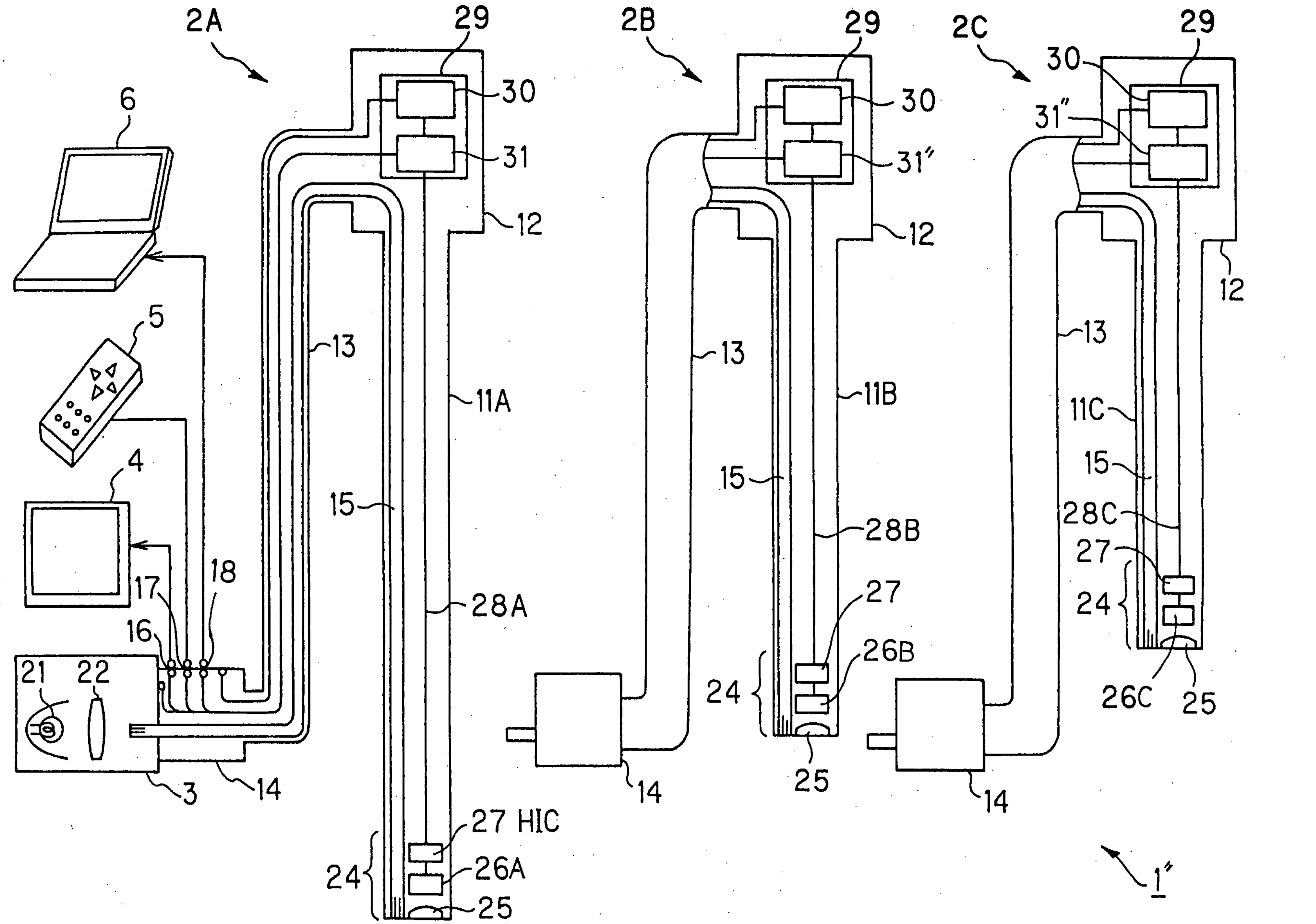

DIGITAL ZOOM PROCESS, PAN, TILT.
2A
41
A/D
DSP
~~デジタル~~
ZOOM~~処理~~
~~PAN~~
~~TILT~~
47c
40
CDS
52
54
55
53
32
~~マイコン~~
58
MICROCOMPUTER
30
29
31
28A
26
27
85u
39
DL
~~遅延~~
DELAY
59
OSC
37
~~ディップスイッチ~~
DIP SWITCH
RGB
~~デコーダ~~
ENCODER
16
56
38
35
85r
85d
85l
87a
86a
~~モータ~~
MOTOR
~~モータドライバ~~
DSP~~制御~~
~~マイコン~~
CONTROLLING MICROCOMPUTER
17
18
91a
87b
86b
91b
88
36
96
93
89a
89b
90u
90d
90l
90r
90
MOTOR DRIVER

FIG.12



2A
2B
2C
29
30
31
31″
12
6
5
4
13
11A
11B
11C
15
28A
28B
28C
27
27 HIC
26A
26B
26C
25
24
14
3
16
17
18
21
22
1″

FIG.13

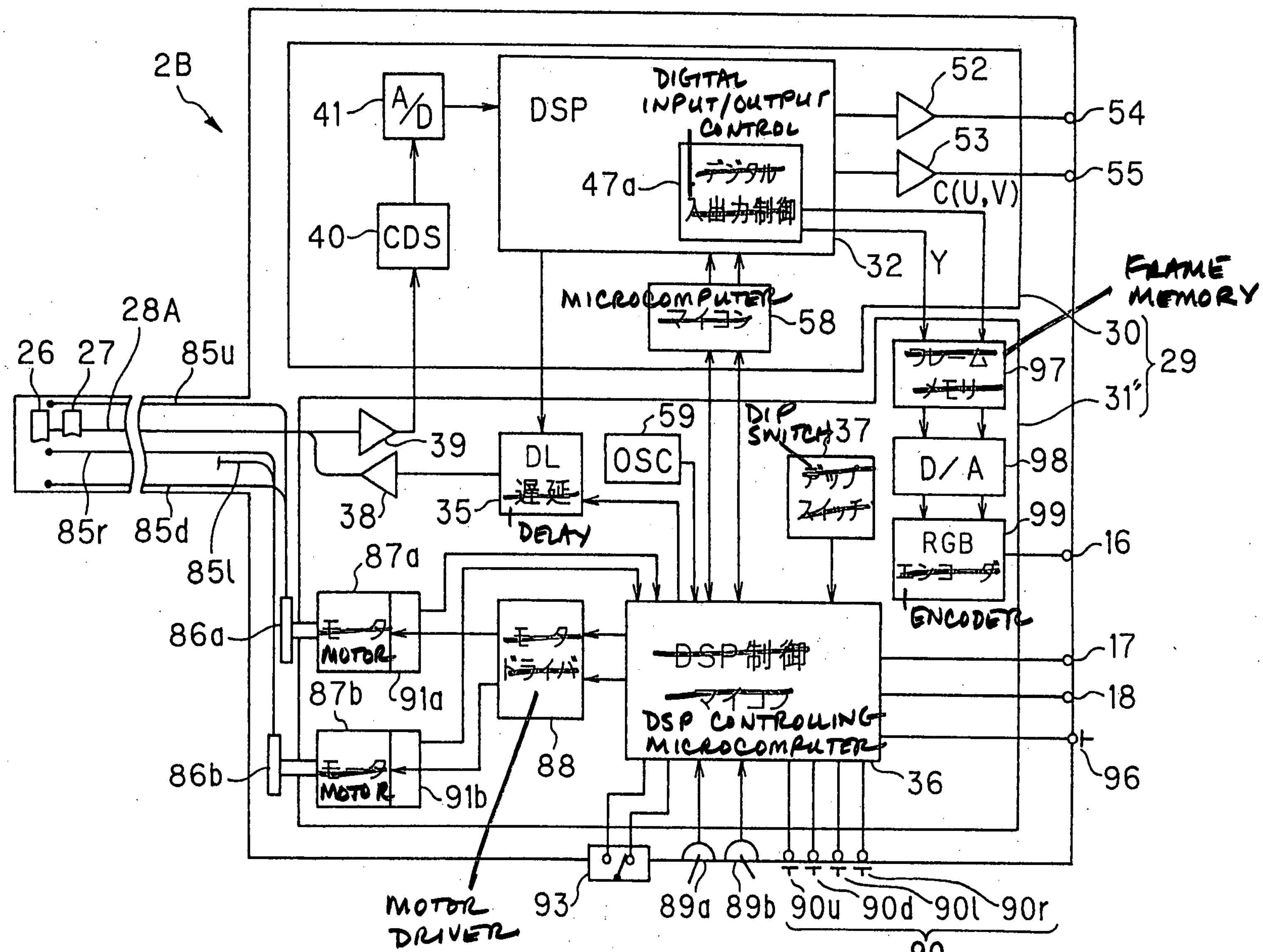
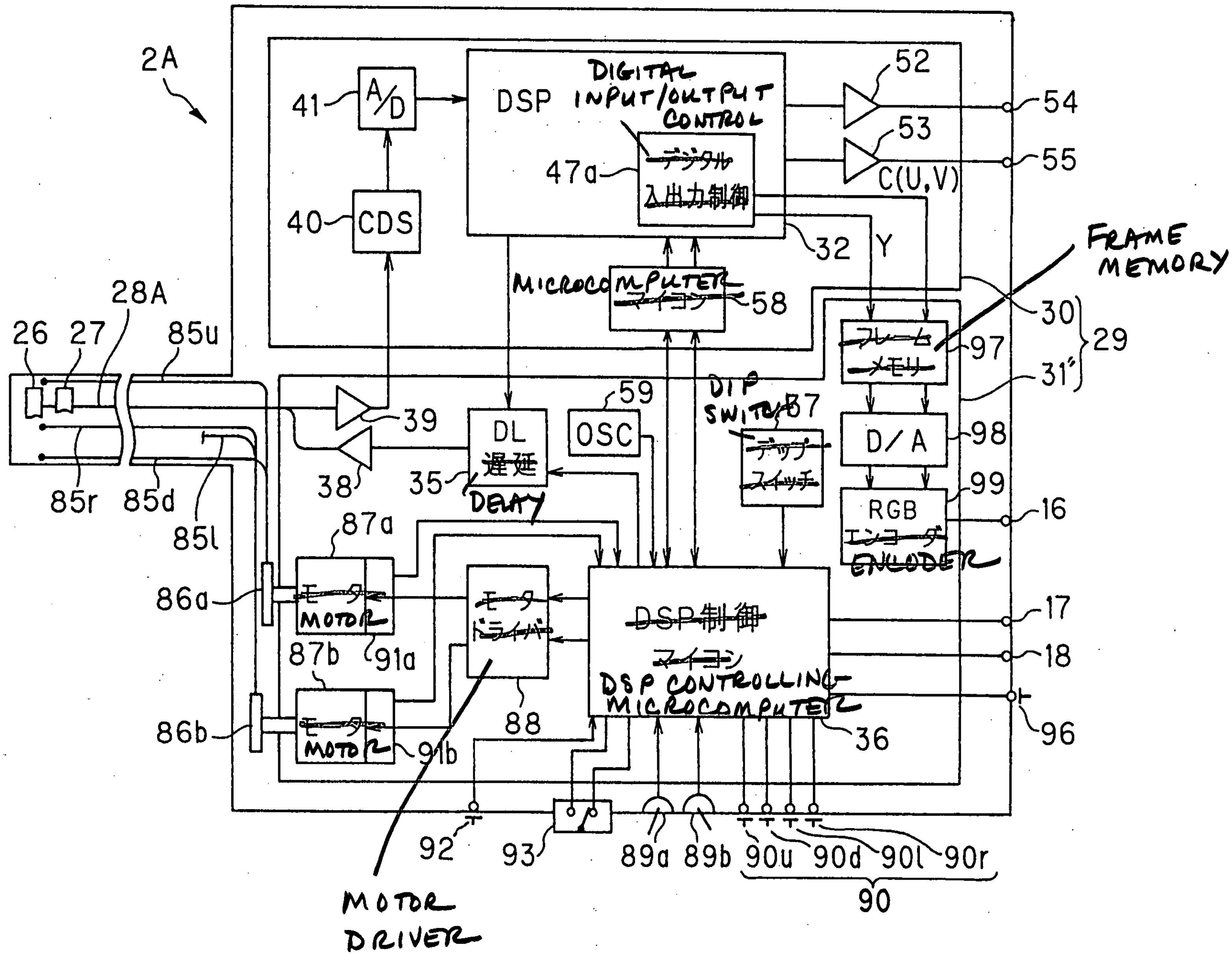

2B
A/D
41
CDS
40
DSP
DIGITAL INPUT/OUTPUT CONTROL
~~デジタル~~
~~入出力制御~~
47a
52
53
54
55
C(U,V)
Y
32
MICROCOMPUTER
~~マイコン~~
58
FRAME MEMORY
~~フレーム~~
~~メモリ~~
97
30
29
31'
D/A
98
RGB
~~エンコーダ~~
ENCODER
99
16
17
18
96
26
27
28A
85u
85r
85d
85l
39
38
DL
~~遅延~~
DELAY
35
OSC
59
DIP SWITCH
~~ディップ~~
~~スイッチ~~
37
~~DSP制御~~
~~マイコン~~
DSP CONTROLLING MICROCOMPUTER
36
87a
~~モータ~~
MOTOR
91a
87b
~~モータ~~
MOTOR
91b
86a
86b
~~モータ~~
~~ドライバ~~
88
MOTOR DRIVER
93
89a
89b
90u
90d
90l
90r
90

FIG.14


2A
A/D
41
DSP
DIGITAL INPUT/OUTPUT CONTROL
~~デジタル入出力制御~~
47a
52
53
54
55
C(U,V)
Y
32
40
CDS
MICROCOMPUTER
~~マイコン~~
58
FRAME MEMORY
~~フレームメモリ~~
97
30
31'
29
28A
26
27
85u
39
38
DL
遅延
DELAY
35
59
OSC
DIP SWITCH
~~デップスイッチ~~
37
D/A
98
RGB
~~エンコーダ~~
ENCODER
99
16
85r
85d
85l
87a
86a
~~モータ~~
MOTOR
91a
87b
86b
91b
~~モータドライバ~~
88
~~DSP制御マイコン~~
DSP CONTROLLING MICROCOMPUTER
36
17
18
96
92
93
89a
89b
90u
90d
90l
90r
90
MOTOR DRIVER